

Functional Area 5.2

BUILDINGS AND STRUCTURES MAINTENANCE

Table of Contents

| | |
|---|----|
| BUILDINGS AND STRUCTURES maintenance | 1 |
| 5.2.1 introduction..... | 1 |
| 5.2.2 SCOPE OF SERVICES..... | 1 |
| 5.2.2.1 Work Area/System Description | 1 |
| 5.2.2.2 Work Management and Control | 2 |
| 5.2.3 SCHEDULED TASKS | 2 |
| 5.2.3.1 Cyclic Inspections and Maintenance | 3 |
| 5.2.3.2 Plumbing Preventive Maintenance..... | 5 |
| 5.2.3.3 Electrical Preventive Maintenance | 5 |
| 5.2.3.4 Fire Alarm System Checks..... | 6 |
| 5.2.3.5 Medical and Dental Facilities Maintenance | 7 |
| 5.2.3.6 Winterization and Dewinterization of Buildings and Other Systems..... | 7 |
| 5.2.4 UNSCHEDULED TASKS | 8 |
| 5.2.4.1 Carpentry | 8 |
| 5.2.4.2 Roofing | 12 |
| 5.2.4.3 Locksmith Services | 13 |
| 5.2.4.4 Masonry | 13 |
| 5.2.4.5 Painting..... | 14 |
| 5.2.4.6 Sign Work | 16 |
| 5.2.4.7 Metal Work..... | 17 |
| 5.2.4.8 Electrical Systems..... | 20 |
| 5.2.4.9 Plumbing and Steamfitting..... | 28 |
| 5.2.4.10 Swimming Pool Maintenance..... | 31 |
| 5.2.4.11 Fire Alarm Systems..... | 31 |
| 5.2.4.12 Minor Construction Project Accomplishment..... | 32 |
| 5.2.4.13 Demolition..... | 33 |
| 5.2.4.14 Medical and Dental Facilities Maintenance | 34 |
| 5.2.4.15 Miscellaneous Labor and Support | 34 |

List of Technical Exhibits

| <u>Exhibit Number</u> | <u>Title</u> |
|-----------------------|--|
| 5.2-001 | Contract Data Requirements Lists (CDRLs) |
| 5.2-002 | Building Categories |
| 5.2-003 | Examples of Electrical Systems and Equipment |
| 5.2-004 | Required Scheduled Tasks |

[This Page Not Used]

Functional Area 5.2

BUILDINGS AND STRUCTURES MAINTENANCE

5.2.1 INTRODUCTION

The Contractor shall maintain and repair all buildings and structures on Fort Lee, unless otherwise specified in this Contract. Buildings and structures include, but are not limited to, offices, storage facilities, work areas, recreation facilities, training facilities, loading docks, medical facilities, bridge structures, and the helipad. The Contractor shall also perform alterations and minor construction as approved by the COR. Maintenance of all areas, facilities, and structures occupied by the Contractor shall be the responsibility of the Contractor. The Contractor shall coordinate all work with the requester in order to preclude life threatening situations, hardships, and operational problems. All work shall be performed by qualified personnel in accordance with applicable laws, regulations, and documents in Section C-6. Technical Exhibits provide expanded information for this Functional Area.

5.2.2 SCOPE OF SERVICES

5.2.2.1 Work Area/System Description

The Contractor shall perform inspections, preventive maintenance (PM), and repair of buildings, structures, and associated property and equipment encompassing a variety of trades including carpentry, mechanical, plumbing, electrical, painting, metal, roofing, structural, and masonry. Buildings and structures covered under this Functional Area include, but are not limited to, the following:

- Administrative buildings
- Dining facilities (refer to Laundry Equipment and Dining Facility Equipment Maintenance)
- Training facilities
- Maintenance shops
- Warehouses
- Storage and equipment sheds
- Wholesale and retail outlets
- Transportation facilities
- Medical facilities and clinics
- Heliport facilities
- Bridge structures
- Schools, chapels, and recreational facilities
- Barracks

- Billeting

The Contractor shall maintain all buildings and structures including those constructed before and during the contracting period.

5.2.2.2 Work Management and Control

5.2.2.2.1 Reporting Requirements. The Contractor shall prepare, submit, and maintain all records and reports as specified herein and in accordance with the Contract Data Requirements Lists (CDRLs) in Technical Exhibit 5.2-001.

5.2.2.2.2 Publications and Forms. Specific publications and forms required for the accomplishment of work described in this Functional Area are listed in Section C-6.

5.2.2.2.3 Building Categories. For identification purposes, particular types of buildings have been broken into categories as listed in Technical Exhibit 5.2-002.

5.2.2.2.4 Services and Special Requirements for Medical and Dental Centers. The Contractor shall provide all maintenance and repair services for the medical clinic, dental clinic, and other associated buildings. Maintenance and repair of these facilities shall be given preference over all other work of similar a nature.

5.2.2.2.4.1 Coordination with the Government. The Contractor shall maintain close communication with the Government official designated as the point of contact for the Army Medical and Dental Activity Command (MEDDAC) in all actions related to the requirements listed in this Functional Area. The Contractor will receive work documents from the designated Government point of contact. These work documents will be keyed into the Government MIS by clinic personnel and printed for the Contractor to initiate work. The Contractor shall respond to high priority work orders within ten minutes.

5.2.2.2.5 Water and Gas Systems. The Contractor shall ensure that water, chilled water and hot water, vacuum, inert gases, natural gas, steam, and fire sprinkler systems are available, upon demand, at pressures and flow rates in accordance with system design specifications in all applicable buildings and structures. When repairs requiring a system outage are planned, the Contractor shall submit to the COR a letter detailing the type of outage, scheduled dates, scheduled hours, areas, building number, a listing of all customers with their concurrence or non-concurrence to the scheduled outage, and any special provisions related to the outage (CDRL 502R001). This letter shall be submitted no later than 15 calendar days prior to the scheduled outage date. The Contractor shall make any special required provisions for service replacement with the customer if the outage will have an adverse impact on customer facilities.

5.2.3 SCHEDULED TASKS

The Contractor shall perform the tasks described below on a recurring or scheduled basis and record the work under approved Standing Operating Orders (SOOs). Lists of installed serviceable equipment located at Fort Lee and its properties are provided in Technical Exhibits 5-001, 5-002, and 5-003. The Contractor shall maintain all facilities and buildings at Fort Lee during the contract period in a safe, operational, and aesthetically pleasing condition as specified herein or as directed by the COR. Routine and preventive maintenance shall be performed to a standard that prevents deterioration beyond normal

wear and tear. The Contractor shall be responsible for performing and scheduling all inspections and preventive maintenance actions in accordance with the paragraphs that follow and with current Federal, state, local, and Army regulations. The Contractor shall develop and implement a comprehensive PM program for the requirements listed herein. The Contractor shall notify the Work Reception Desk by the close of business after discovering any work that exceeds the scope of preventive maintenance requirements, and the repairs shall be made via IJO or SO. A list of required scheduled tasks is provided in Technical Exhibit 5.2-004.

5.2.3.1 Cyclic Inspections and Maintenance

The Contractor shall complete a semi-annual inspection of each permanent building and a semi-annual inspection of the barracks, in accordance with the Preventive Maintenance requirements in paragraphs below. Family housing inspections shall be covered under Functional Area 5.3. Additional inspections shall be performed at the request of the COR. The Contractor shall repair all deficiencies according to national industry standards. The exclusion of a facility, system, equipment, or appurtenant parts from cyclic maintenance requirements does not relieve the Contractor from the responsibility for the performance of all other directed work covered under this Functional Area.

5.2.3.1.1 General Criteria. The Contractor shall ensure that all active facilities are free of missing components or defects that would affect the safety or use of the facility, or would prevent any electrical, mechanical, plumbing, roofing, or structural system from functioning according to design. The Contractor shall ensure that all unoccupied facilities are safe, structurally sound, weathertight, and secured. During each inspection, the Contractor shall contact the building coordinator/resident to determine if any problems exist in the facility.

5.2.3.1.2 Scheduled Items. Scheduled tasks shall include, but not be limited to, the following items:

5.2.3.1.2.1 Structure. The Contractor shall inspect each facility for structural integrity.

5.2.3.1.2.2 Exterior Surfaces. The Contractor shall inspect all exterior surfaces and ensure that there are no loose, broken, or deteriorated sections or panels. All exterior surfaces shall be weathertight. An exterior surface is any surface that is exposed to the weather, including, but not limited to, windwalls, wind screens, and roofs.

a. The Contractor shall inspect all doors, windows, hardware, and locks; and check that they operate properly, are not broken and are securable.

b. The Contractor shall inspect all roofing to ensure that the roofs are free of missing panels and have no leaks. All roofing hardware (e.g. roof vent jacks), vent stacks, and caps shall be unbroken and free of missing components, deterioration, and leakage.

5.2.3.1.2.3 Interior Surfaces. The Contractor shall inspect all interior surfaces and ensure that there are no loose, broken, or deteriorated sections or panels. All interior surfaces shall be safe and structurally sound. Interior surfaces include, but are not limited to, floors, walls, ceilings, doors, windows, and trim.

5.2.3.1.2.4 Electrical. The Contractor shall inspect the electrical systems of each facility, and shall perform an operational check on all outlets, light fixtures (interior and exterior), and exit light signs. The Contractor shall ensure that electrical systems are safe and operational at the level required for the facility's usage.

- a. Smoke, Carbon Monoxide, and Heat Detectors. The Contractor shall ensure that each detector is operational. The Contractor shall depress the detector test button to ensure that it works.

5.2.3.1.2.5 Plumbing. The Contractor shall inspect the plumbing of each facility, and shall ensure that all sinks, showers, tubs, garbage disposals, faucets, angle stops, water fountains, urinals, commodes, traps, drains, clean outs, floor drains, covers, and toilets are operating properly and that there is no excessive noise, vibration, leakage, and/or blockage. The Contractor shall ensure that all plumbing equipment and components are safe and operational at the level required for the facilities usage.

5.2.3.1.2.6 Heating, Ventilating, and Air Conditioning (HVAC). The Contractor shall inspect vents for proper operation.

5.2.3.1.2.7 Corrosion. The Contractor shall inspect all metal fixtures and equipment in all facilities for corrosion. The Contractor shall identify causes of corrosion, repair corrosion damage, and take steps to prevent its recurrence.

5.2.3.1.2.8 Water Intrusion and Drainage. The Contractor shall inspect all facilities for water intrusion and drainage problems. The Contractor shall repair damage where water has gained entry to a facility. When immediate repair is not possible, the Contractor shall cover the damaged area with plastic to prevent further water entry. Where water pools next to the exterior of a facility, the Contractor shall fill, grade, or otherwise provide appropriate drainage away from the facility.

5.2.3.1.2.9 Mold and Mildew. The Contractor shall inspect all facilities for mold and mildew damage. Where there is excessive damage, the Contractor shall determine the cause of the damage, repair existing damage, and take steps to prevent its recurrence.

5.2.3.1.2.10 Fences. Fences shall be inspected for instability and damage, and shall be repaired as necessary.

5.2.3.1.3 Cyclic Inspection Records. The Contractor shall document all cyclic building inspections and shall maintain this information for one year. The records shall be made available to the COR upon request. The following information shall be included:

- Building number
- Occupant
- Phone number
- Start date
- Completion date
- Labor hours

- Items that were repaired or replaced, the quantity, the date(s) work was done on the item(s), and the worker who completed each task.

5.2.3.2 Plumbing Preventive Maintenance

5.2.3.2.1 Pumps and Pits. On an annual basis, the Contractor shall check piping, fittings, traps, insulation, and fixtures for defective parts or connections and test for leaks. In addition, the Contractor shall annually clean sand and other debris from sump pump pits and pump out pits as required.

5.2.3.2.2 Sump Pumps. The Contractor shall check sumps in the boiler rooms on a monthly basis. This check shall include: cleaning trash from the bottom of the sump; checking the electrical plug, cord and connections; inspecting the float, float rod, and switch; activating the float switch; checking and adjusting the operation of the sump pump; inspecting the pump body for corrosion; lubricating the sump pump; inspecting packing; checking the pump for drag or misalignment; and check pump bearing for overheating.

5.2.3.2.3 Hot Water Heaters. On an annual basis, the Contractor shall: check tanks and piping water leaks; check for fuel system leaks; adjust the pilot fire on oil burners; check the pilot on oil/gas burners and adjust as required; check oil/gas burners for proper flame and adjust if required; check the operation and condition of relief valves; check automatic controls (temperature regulators, thermostatic devices, automatic fuel shut-off valves, etc.) for proper operation; check draft diverters and clear openings if clogged for gas burners; check fuel strainer elements on oil burners; check fuel level in tanks; check tank fill pipes and fuel lines and connections for damage; inspect, clean, and adjust electrodes and nozzles on oil burners; inspect fire box and flame detection scanners; check electrical wiring for fraying and loose connections on oil burner; check for proper water temperature setting and adjust if required; clean fire boxes; check for proper draft adjustment; adjust draft meter if necessary for oil burners; check gas pressure regulators by using a water column pressure gauge; check the condition of flue pipes, dampers, and chimneys; and drain and flush tanks (average 75 gallons).

5.2.3.3 Electrical Preventive Maintenance

The Contractor shall perform scheduled inspection, testing, calibration, maintenance, and other services for electrical systems and components as specified below.

5.2.3.3.1 Emergency Lighting. Preventive maintenance of auxiliary lighting units and systems shall be performed by the Contractor monthly for wet cell batteries and central units and annually for maintenance-free batteries. The emergency lighting system shall be maintained semi-annually by the Contractor. This maintenance shall include: testing all systems and units for correct operation, cleaning battery compartments and spot painting, as necessary; maintaining normal battery electrolyte level; tightening any loose connections; maintaining correct charging voltage; replacing defective indicator lamps; replacing defective illuminating lamps; and adjusting and focusing swivel head lamps. The Contractor shall annually check the emergency power pack in fluorescent lighting fixtures and replace, if defective.

5.2.3.3.2 Heliport Lighting. On a daily basis, the Contractor shall check that all lights at the heliport are operational. Broken lights shall be corrected within one workday of

discovery. The Contractor shall replace light bulbs as necessary. Not more than one light shall be inoperative at any time. The Contractor shall complete the daily heliport inspection report.

5.2.3.3.3 Smoke Detectors. The Contractor shall accomplish PM on smoke detectors. The Contractor shall report defective smoke detectors, building number, and point of contact to the COR in writing (CDRL 502R002) within 24 hours of discovery.

5.2.3.3.4 Grounding Point Checks. The Contractor shall perform grounding point checks on all points and facilities. The Contractor shall correct all discrepancies found within three working days.

5.2.3.3.4.1 Ammunition Dump. The Contractor shall check the grounding system at the ammunition dump on an annual basis. The Contractor shall arrange with DOL Supply for entry into the areas. The Contractor shall inspect and maintain the grounding systems for the bunkers. The Contractor shall forward a copy of the test results to the Safety Director.

5.2.3.3.4.2 Reporting Requirement for Grounding Point Checks. The Contractor shall prepare a Ground Safety Check Form (CDRL 502R003) detailing the locations of ground points, the type of ground point, the reading taken, any discrepancies found, and the corrective action performed. The Contractor shall submit the completed Ground Safety Check Form to the COR within five working days of the completion of the ground point checks.

5.2.3.3.4.3 Resistance Levels. The Contractor shall ensure that the maximum allowable resistance of each grounding electrode is no more than 23 ohms to earth for all types of grounding point checks. For ammunition storage facilities grounding point checks, the maximum allowable reading on any of the required ground points shall be 10 ohms.

5.2.3.4 Fire Alarm System Checks

5.2.3.4.1 Daily Checks. On a daily basis, the Contractor shall check the central receiving station of the fire alarm system, located at the MP Provost Marshall Building, Building 8526. As part of this check, the Contractor shall check all printouts and integrate the system. All fire alarm work shall be performed in accordance with the latest edition NFPA National Fire Alarm Code.

5.2.3.4.2 Quarterly Checks. The Contractor shall perform a visual check of all fire alarm panels and transceivers annually. One quarter of the buildings containing this equipment shall be checked each fiscal quarter. Checks shall include battery current and voltage, and shall be done per manufacturer's recommendations. Fort Lee has 206 panels and 193 transceivers.

5.2.3.4.2.1 Quarterly Fire Alarm Report. The Contractor shall prepare a report on the results of all panel and transceiver checks performed during the quarter (CDRL 520R004). The report shall include a list of all buildings checked. The report shall be submitted to the Fort Lee Fire Chief within 15 calendar days after the end of each fiscal quarter.

5.2.3.5 Medical and Dental Facilities Maintenance

The Contractor shall perform repairs and maintenance to the following Medical and Dental systems:

5.2.3.5.1 Emergency Lighting Equipment Testing. The Contractor shall conduct periodic testing of emergency lighting equipment on required lighting equipment (as determined by the clinic) at 30-day intervals for a minimum of 30 seconds, and annually for a duration of 1-1/2 hours. Upon encountering a problem, the Contractor shall submit a service order and fix the problem.

5.2.3.5.2 Sump Pumps. The Contractor shall perform the following recurring maintenance on sump pumps at 30-day intervals. The Contractor shall turn on pump motor to ensure the motor is in operable condition; lubricate all moving pump parts; calibrate the on-off sump level switch for correct settings in accordance with the sump size; visually inspect for debris, and remove any items that can clog or damage the pump.

5.2.3.5.3 Steam Systems. The Contractor shall perform recurring maintenance on the steam systems and components.

5.2.3.5.3.1 Steam Traps and Strainers. The Contractor shall semiannually disassemble, clean, and inspect steam traps and steam strainers for wear; inspect for defects; replace parts using a repair kit designated for the specific application; reassemble; and inspect for operation.

5.2.3.5.3.2 Radiator Coils. The Contractor shall annually disassemble and inspect radiator coils to ensure they are operating as designed. The Contractor shall inspect and clean heating coils for free flow of steam. The Contractor shall reassemble and inspect for operation.

5.2.3.5.3.3 Gate Valves. The Contractor shall annually inspect gate valves on steam lines to ensure that they are operating as designed. The Contractor shall inspect valve packing and replace, if hard or broken; inspect valve and gland nut for cracks and thread alignment; re-pack valve and reinstall in steam line; tighten gland nut to eliminate leaks; and inspect for valve operation.

5.2.3.6 Winterization and Dewaterization of Buildings and Other Systems

The Contractor shall winterize and dewaterize non-heated facilities and other non-heated systems, to include, but not limited to, Buildings 6007, 6009, 1127, 12307, 9016, 8021, and 11040. In addition, the Contractor shall be responsible for identifying and correcting any deficiencies noted during the performance of this work which present a potential for freeze damage or water leak damage. Other winterizations shall be performed as unscheduled tasks upon receipt of a valid work document. The Contractor shall complete the winterization or dewaterization of buildings and other systems within 14 calendar days after receipt of a notice to proceed and/or a COR-issued list.

5.2.3.6.1 Winterization Requirements By Facility Type.

5.2.3.6.1.1 Latrines and Bathhouses. The Contractor shall: turn off electrical power, fuel supplies, and water supplies to all appliances and fixtures in the non-heated facilities and underground systems; disassemble parts and/or equipment required to prevent freezing and property damage (items shall include, but are not limited to,

shower valves, commodes and/or urinal flushometers, and p-traps); remove drain plugs; open hot and cold lavatory and/or shower faucets; drain water heaters; pump out commodes; add antifreeze to commodes, urinals, p-traps, and floor drains; and winterize drinking fountains.

5.2.3.6.2 Dewinterization. Dewinterization shall include, but is not limited to: reassembling removed parts and/or equipment of building plumbing, electrical and/or other equipment; turning on utilities including, but not limited to, electricity and water; draining and flushing antifreeze from mechanical systems; checking mechanical systems including, but not limited to, the plumbing system, heating system, and building equipment for proper operation; repairing leaks and malfunctions due to freeze related damage; and turning water on at underground shutoff valves. The Contractor shall make all necessary repairs related to freeze damage to place these facilities and systems in proper operation within 14 days after the receipt of notification to proceed from the COR.

5.2.4 UNSCHEDULED TASKS

The Contractor shall perform the tasks described below when initiated through either a Service Order (SO) or an approved Individual Job Order (IJO). All work shall be performed in accordance with the timeliness standards set forth in Section C-5, unless otherwise directed by the COR.

5.2.4.1 Carpentry

The Contractor shall perform carpentry services for construction, alterations, extensions, modifications, maintenance, and repairs on buildings and structures. The Contractor shall perform carpentry in all facilities to prevent or correct structural or non-structural damage. Maintenance, repair, and alteration of buildings and structures shall include all structural features such as foundations, walls, doors, door stops, door closures, windows, roof framing, roofing, floors and floor coverings, porches, gingerbread fencing and trim, stairs, fixtures, hardware, exterior and interior painting, and glazing. The Contractor shall maintain and repair other equipment including automatic entrance doors, fencing, foot bridges, overhead doors, playground equipment, guard and watch towers, grease racks, unattached loading ramps, wash racks, training facilities, monuments, grandstands and bleachers, elevated garbage racks, sidewalks, platforms, hand rails, interior and exterior woodwork trim, identification signs, bulletin boards, display cases, cabinets, partitions, ceilings, and waterproofing seals and flashing not included in other crafts and shop work, as directed by the COR and as specified herein. Where structures of the type shown in this section are identified elsewhere in the specifications, this section shall be used as a supplement to the maintenance responsibilities shown elsewhere.

5.2.4.1.1 Quality Standards. Interior and exterior finishes, trim, and decor shall be maintained to match or exceed existing appearance and quality. All carpentry work performed shall be consistent with the construction and appearance of the existing facility or structure, unless otherwise directed by the COR. The Contractor shall follow national building practices in all cases.

5.2.4.1.2 Treatment of Materials. Carpentry work shall be planned and accomplished to offer maximum resistance to fungus, mildew, termites, water absorption, and all other deleterious effects of the environment. The Contractor shall follow standard industry

practices when choosing the proper wood treated materials. All woods in contact with concrete and masonry shall be preserved and treated by pressure methods and so marked in accordance with the American Wood Preservers Institute Standards. Wood treated with waterborne preservatives shall be air and kiln dried to the moisture content specified for lumber and marked with the word "dry". Treated wood shall be used in all exposed locations that lack protection from the weather. If a cut is made in treated wood, the cut shall be brush coated with a wood preservative.

5.2.4.1.3 Carpentry Functions. The Contractor shall repair, replace, install, and remove carpentry items such as framing, finish work, floor and wall coverings, ceilings, roofing, porches, cabinets, and hardware on buildings, structures, and facilities. The Contractor shall fabricate and repair shipping boxes, rooms of various sizes, and small utility buildings.

5.2.4.1.3.1 Forms. The Contractor shall lay out, fabricate, install, and remove a variety of forms for concrete placement such as headwalls, pads, sidewalks, stoops, and curbs. The Contractor shall fabricate, install, and remove (strip), forms for footings, foundations, headwalls, sidewalks, manholes, concrete pads, free standing steps, and all other tasks requiring form work. The Contractor shall install shoring in trenches, ditches, and overdigs to support dirt banks.

5.2.4.1.3.2 Framing. The Contractor shall lay out, install, replace, repair, and remove interior and exterior walls, floors, roofs, platformed towers, steps and handrails, ceilings, and roofs. Components include: studs, ceiling and floor joists, diagonal bracing, cripples, trimmers, headers, fire blocks, sole plates, top plates, piers, girders, rafters, ridges, and bridging. The Contractor shall ensure that all structural members that contribute to structural integrity using wood or steel framing have climatic and environmental factors, as allowed by local fire and building codes. The Contractor shall layout, install, replace, and remove insulation, in roofs, walls, floors, and ceilings.

5.2.4.1.3.3 Siding. The Contractor shall install and repair exterior siding and trim to include wood, metal, plastic, and compositions.

5.2.4.1.3.4 Windows. The Contractor shall install and repair windows, including storm windows and screens, sashes, lifts, locks and latches, balances, anchors, and trim. Windows may be fixed or movable, and may consist of glass or glazing. The Contractor shall also install and maintain weather-stripping, threshold windows (sliding, double-hung, jalousie, fixed and casement, window frames, window arm, and window crank operators), standard and non-standard windows, rails, muntins, frames and casings for windows (except thermal pane), transoms, and ventilators.

5.2.4.1.3.5 Doors. The Contractor shall install and repair doors including entrance, storm, interior, overhead, sliding vehicle, roof hatches, gear driven, overhead chain, and other special access doors. Doors may be manual, power operated, or automatic, and may include hardware, glass, locks, latches, stop operators, automatic sensors and activators, kick and push plates, jamb, trim, anchors, butts, and hinges. The Contractor shall also install and maintain interior and exterior metal and wood doors (single, double, dutch, storm, screen, pocket, cabinet, overhead, sliding, bi-folding, latrine partition, and accordion), door frames, and hardware (door closures, hinges, locks and knobs, barrel bolts, dead bolts, head

and foot bolts, hasps, panic hardware, door bumpers, and door mounted transoms and ventilators).

- 5.2.4.1.3.6 Wall Coverings. The Contractor shall layout, install, repair, replace, and remove interior and exterior wall coverings such as wood paneling, wainscot, marlite, Formica, drywall, plasterboard, stucco and/or plaster wire, plywood, fiberboard, shiplap, acoustical tile, and masonite. Maintenance and repair of ceilings and walls shall include patching and/or replacing broken or cracked areas as a result of wear and tear and touch-up painting of affected area
- 5.2.4.1.3.7 Walls. The Contractor shall install, repair, replace, and remove interior walls and partitions (to include insulation, wall covering, trim, and finish) consisting of drywall, plaster, wood and/or paneling, trim (window, door, floor, and ceiling), and finishes (paint, vinyl, wall paper and/or pre-finished paneling).
- 5.2.4.1.3.8 Ceilings. The Contractor shall lay out, install, repair, replace, and remove ceilings such as sheetrock, acoustical tile, suspended ceiling, plywood, tin, and Celotex. The Contractor shall repair ceilings (to include insulation, furring, suspension systems and anchors) consisting of plaster, drywall, wood, cellulose, and acoustical materials.
- 5.2.4.1.3.9 Floor Coverings. The Contractor shall lay out, install, repair, replace, and remove interior and exterior subflooring, underlayment, and floor coverings, including rubber, asphalt, or vinyl tile, tongue and groove, plywood, wood parquet, quarry tile, and mastipave. The Contractor shall install, repair, replace, and remove nonskid materials on areas such as stairs, steps, ramps, and docks. The Contractor shall install and repair floor covering and underlayment to include carpet, resilient tile and sheet goods, wood, quarry tile, terrazzo, and monolithic placed composition.
- 5.2.4.1.3.10 Finish Carpentry. The Contractor shall fabricate, install, repair, replace, and remove finish carpentry work such as accessories (map boards, fire extinguisher brackets, towel bars, toilet paper holders, robe hooks, medicine cabinets, shades, traverse rods, mirrors, grab bars), gingerbread trim, molding, window screens, signs, and columns. Other items include pigeon holes, bulletin boards, storage bins, bookcases, various types of molding, pictures, crowns, shoes, and coves.
- 5.2.4.1.3.11 Cabinet Making. The Contractor shall layout, fabricate, install, repair, and replace hand made items such as fine cabinetry, racks, shelves, showcases, storage units, file boxes, service counters, workstations, special shipping crates, kitchen and bathroom cabinets, Formica counter tops, molding and trim, signs, picture frames, plaques, and specially constructed office furniture which may have intricate, precise, and fancy features such as curved and contoured surfaces, scroll work inlays, complex joints, and laminated plastics (e.g. countertops). The Contractor shall fabricate cabinets by cutting, bonding, fitting, assembling, shaping and contouring surfaces, and shall make scrollwork using precise and intricate joining and decorating with power shapers, mortise, planers, jointers, routers, lathes, and various other woodworking tools, accessories, and machines. The Contractor shall devise fixtures, templates, and jigs to hold or guide items in woodworking machinery.

- 5.2.4.1.3.12 Attached Structures. The Contractor shall replace or repair porches, patios, decks, carports, and covered walkways and areas to include floors, decks, steps, risers, hand or other railings, columns and/or other support, roof structures, and roofing. Structures shall be maintained in a safe and serviceable condition. The Contractor shall repair or replace flooring, paint, and patch concrete; treat wooden or concrete patios with appropriate wood or concrete preservative to prevent rot and mildew; and use treated materials and primer to ensure maximum life.
- 5.2.4.1.3.13 Glass. The Contractor shall replace broken or cracked glass with new glass in buildings, structures, and facilities, to include cutting and installing glass for doors, and windows. Types of glass shall include, but not be limited to, plate glass, plexiglass, safety glass, and thermal pane, and shall match existing materials in use. The Contractor shall lay out, design, cut, drill, and grind. The Contractor shall cut, replace, and remove glass on different types of doors, windows (except for thermal pane windows), mirrors, display counters, bulletin boards, cabinets, and any other components requiring glazing. The Contractor shall secure windows and doors when glass required is not available. The Contractor shall ensure that all glass debris is picked up and disposed of properly.
- 5.2.4.1.3.14 Glazing. The Contractor shall glaze interior and exterior single paned doors and windows such as glazed aluminum sash, steel sash, channel aluminum, wood sash, and beaded aluminum. The Contractor shall use glazing compound, clips, angles, beads, splines, moldings, weather stripping, and spacer strips. The Contractor shall replace glass in doors and windows with glass of the same thickness.
- 5.2.4.1.3.15 Fencing. The Contractor shall perform layout, fabrication, installation, repair, replacement, and removal of wood fencing. Installations and repairs shall be accomplished to offer maximum resistance to fungus, decay, mildew, termites, water absorption, and other deleterious effects of the environment.
- 5.2.4.1.3.16 Handrails, Steps, Ladders, Machinery. The Contractor shall install, replace, repair, remove, and anchor handrails, steps, ladders, and machinery.
- 5.2.4.1.3.17 Weapon Racks and Security Safes. The Contractor shall install, replace, anchor, and remove weapon racks and security safes to wood, concrete, metal, block floors, and footers. The Contractor shall anchor security safes in accordance with the physical security guidelines.
- 5.2.4.1.3.18 Decorations. The Contractor shall lay out, fabricate, repair, replace, and remove various types of displays such as reindeer sleighs, wreaths, and other decorations for holidays, parade floats, and special event booths.
- 5.2.4.1.3.19 Beams and Columns. The Contractor shall repair, paint, or replace wood, concrete, and metal beams and columns as necessary to ensure structural soundness and mitigate rot, insect damage, and fire damage.
- 5.2.4.1.3.20 Steps. The Contractor shall maintain and repair wood, metal, and concrete steps as necessary to ensure their safety and structural integrity. Repair and maintenance shall include, but not be limited to, installing tread, applying wood preservative, repairing or replacing rotted wood, painting steps, replacing safety strip on tread, and tightening treads as necessary.

5.2.4.1.3.21 Ramps. The Contractor shall ensure that wood, metal, and concrete ramps are structurally sound and safe to use. The Contractor shall repair or replace wood; treat for rot; patch concrete; paint; install treads on ramps; and treat loading, unloading, mechanically operated, and access ramps with anti-slip abrasive coating.

5.2.4.1.3.22 Crate Fabrication. The Contractor shall design and fabricate special packing containers and container components. Work shall be performed in conjunction with the packing and crating shop in Functional Area 5.11 and in accordance with all applicable regulations.

5.2.4.2 Roofing

The Contractor shall provide roofing services for all buildings and structures. These services include minor installation, repairing, replacing, and removing various types of roofing, gutters, and downspouts. The Contractor shall flash and re-tin or replace ventilators as necessary to repair damage and stop or prevent leaks. The Contractor shall cut roof penetrations, install roof jacks, and ensure that roof penetrations are sealed to prevent any kind of moisture leakage from roof penetrations. In the course of roofing work, the Contractor shall also install and repair rafters, studs, sills, plates, joists, floors, subfloors, panels, siding, sheathing, building paper, insulating materials, dry and wood walls, acoustical tiles, step treads, and security attachments. Types of roofing to be worked on shall include, but not be limited to, gravel asphalt, rolled, monofrom, shingle, industrial membrane, tile, slate, terra-cotta, wood, asphalt and pitch flat, built-up, raised rib metal, and metal roofing.

5.2.4.2.1 Conventional Roofing. The Contractor shall perform repairs to all types of conventional roofing systems. The roofing system consists of vapor barrier, insulation, wood fiber board, asphalt or cold tar pitch and felt membrane, gravel ballast, gravel guards, flashing (including base flashing and counter flashing), embedded metal, metal caps, pitch pans and flashed penetrations, roofing felt, shingles or other types of roofing surface, roof vents, and walkways (including asphalt plank, concrete pavers, mineral surfaced felts, and rubber mat). Types of conventional roof systems shall include, but not be limited to, corrugated metal, standing seam metal, asphalt and fiberglass shingle, roll roofing, mineral surfaced, and BUR (Built-Up-Roof).

5.2.4.2.2 Non-conventional Roofing. The Contractor shall perform repairs to all types of non-conventional roofing systems. The roofing system consists of membrane, insulation, flashing, vapor barrier, and roof penetrations. Types of non-conventional roof systems shall include, but not be limited to, CPE (Chlorinated Polyethylene), CSPE (Chlorosulfonated Polyethylene), EPDM (Ethylene Propylene Diene Monomer), NEOPRENE (Chloroprene Rubber), PIB (Polyisobutylene), PVC (Polyvinyl Chloride), Modified Bitumen, Spray-In-Place Polyurethane Foam, and any other Federally approved roofing material.

5.2.4.2.3 Types of Flashing. The Contractor shall use various types of flashing such as gravel stop, roof edging, capping, counter flashing, and gravel stop fascia with the appropriate roof applications.

5.2.4.2.4 Temporary Repairs. The Contractor shall make temporary repairs to damaged roofing, if required, until permanent repairs can be accomplished.

5.2.4.3 Locksmith Services

The Contractor shall install, maintain, adjust, and repair locks, built-in safes, locking systems, latches, panic devices, electrical door locks, and strikes of different makes, sizes, and shapes. The Contractor shall set combination locks on vaults, open locks, and make new keys by code for buildings. The Contractor shall fabricate minor parts from raw stock and install, maintain, repair, clean, re-pack, and adjust all makes and types of door closures. The Contractor shall order and maintain an inventory of all materials necessary to complete the work order.

5.2.4.3.1 Key Control. The Contractor shall refer to Section C-1 on Key Control practices of this Contract. All requests for keys, re-keying, and change of locks shall be approved by the Physical Security Officer at Fort Lee and be performed upon receipt of a valid work document. The Contractor shall record all requests received from the Physical Security Officer into the Government-provided software system. Upon completion of a work order, the Contractor shall document all work in the software system to provide key control tracking and history records. The Contractor shall back up the system every three months and maintain a copy. All furnished locks shall fit into the existing master, core system.

5.2.4.3.2 Keys. The Contractor shall make keys by computer impression for all facilities and equipment on Fort Lee. On average, two to three rekeys are performed per day for Army Family Housing.

5.2.4.3.3 Safes. The Contractor shall install, repair, recombine, and open all built-in safes.

5.2.4.3.3.1 X-07 Mas-Hamilton Safes. The Contractor shall install X-07 locking systems and document the installation on an X-07 Lock Installation Form. All documentation shall be given to the TRADOC Security Officer within three workdays of work completion (CDRL 502R005).

5.2.4.3.3.2 Modes of Operation. The Contractor shall adhere to the mode of operation determined by the Physical Security Officer. The Contractor shall install and set the initial combination for the three modes of operation (three dial, two person integrity, and supervisor/subordinate).

5.2.4.3.3.3 Training. The Contractor shall train customers to recombine safes. The Contractor shall instruct the customer to document the recombination code on a Standard Form (SF) 700 (8-85).

5.2.4.3.4 Other Services. The Contractor shall install, repair, and maintain indoor viewers, door scopes, antiques locks, and panic locks. The Contractor shall grind down useable keys, secure metal hinges on doors, plane doors with locks, stamp keys, remove logged in keys, and remove padlocks (both combination and keyed) from doors and other items.

5.2.4.4 Masonry

The Contractor shall provide fabrication, minor construction, maintenance, and repair services for projects utilizing brick, concrete, masonry block, cinder block, tile, piping, cement, mortar, grout, and sealants traditionally associated with the masonry trades. Masonry work shall include, but is not limited to, the repair, replacement, and

maintenance of foundations, fluid containment walls/barriers, walls, floor slabs, chimneys (including deteriorated brick and tuck pointing), diversion of water from exterior walls, extending downspouts, and similar items. The completed work shall be consistent with the construction and appearance of existing facilities or structures.

5.2.4.4.1 Structural Components. The Contractor shall fabricate, maintain, and repair foundations, basement walls, and floor slabs to keep them sound and free of leaks. The Contractor shall correct conditions contributing to water in basement areas. The Contractor shall repair/replace underground foundations, seal utility entrances, install sump basins for water to drain into and be pumped out. This work shall include diversion of water from exterior walls at ground level, filling low spots, and extending downspouts as required.

5.2.4.4.2 Chimneys and Fireplaces. The Contractor shall fabricate, maintain, and repair chimneys and fireplaces. Chimney work shall include replacement of all deteriorated brick with like material, tuck pointing, and unplugging. Fireplace work shall include repair and replacement of broken and missing bricks, flue tile, cap stones, damper stone, spark screens, and metal dampers.

5.2.4.4.3 Tiling. The Contractor shall install and repair all types of ceramic and quarry tile, and install all types of shower walls and floors. The Contractor shall layout, install, repair, replace, and remove various types of ceramic tile (such as bullnose, sanitary base, sanitary quarry, base bullnose, and field) and sanitary base corners on baseboards, floors, and walls. The Contractor shall repair and replace shower curtain rods, soap dishes, ceramic hand pulls, towel bars, and various ceramic fixtures.

5.2.4.4.4 Brick and Block Laying. The Contractor shall lay blocks and bricks to install all types of doors and windows in structure openings. The Contractor shall perform all types of masonry work as required on an emergency basis for security of the structure.

5.2.4.4.5 Concrete Work. The Contractor shall fabricate forms for steps (e.g. free forming), ramps, approaches, footers, storm drain manholes, concrete curbing footers, catch basins, sump basins, grease traps, concrete curbing, sanitary manholes, traffic islands, and retaining walls. The Contractor shall pour and finish concrete slabs, pavements, sidewalks, and stairs to include placing reinforcements and other embedded items.

5.2.4.4.6 Walls and Ceilings. The Contractor shall fabricate, maintain, and repair all ceilings, walls, and plaster formations to match the surrounding areas. This work shall include patching and/or replacing broken or cracked areas and touch-up painting of affected areas.

5.2.4.4.7 Monuments. The Contractor shall repair and maintain monuments, masonry decorations, or fixtures as required.

5.2.4.5 Painting

The Contractor shall paint the interior and exterior of all buildings, structures, and facilities covered by this Contract, as well as pictorials, artwork, special designs, and murals. Painting shall be accomplished for appearance and for surface protection. The Contractor shall paint items such as walls, ceilings, railings, decks, floors, roofs, window-frames, doors, door-frames, moldings, handrails, stairs, fire hydrants, gates,

steps, stands, fences, carports, decking, equipment, ramps, towers, awnings, flagpoles, gutters, radiators, cabinets, bulletin boards, guy wires and guy wire guards, reflectors, kitchen cabinets, conduit, and other constructed or manufactured items. Painting may be required prior to or after installation. Paints include, but are not limited to, all enamels, paints of all base types, varnishes, and stains. The Contractor shall paint different types of surfaces such as wood, drywall, plaster, metal, concrete, masonry, rocks, fiberglass, plastic, and glass. Contractor shall maintain painting records.

- a. Painting. The Contractor shall perform touch up painting on areas which have been damaged or soiled. Paint used for touch up of repaired surfaces shall blend with the color and texture of the surrounding areas. Surfaces include, but are not limited to, wood, metal, sheetrock, concrete, and plaster.

5.2.4.5.2 Surface Preparation. Prior to applying primers, paints, stains, shellacs, varnishes, or lacquers, the Contractor shall prepare all surfaces, including removing contaminants. The Contractor shall prepare all surfaces in a manner appropriate to the surface and the material to be applied to the surface. The Contractor shall use preparation methods such as sanding, pickling, and stripping, and shall use heat guns and irons, solvents, acids, pickling, and paint removers. The Contractor shall repair and patch any imperfections on surfaces with wood putty, glazing compound, sealers, plastic wood fillers, spackling, joint compound, caulking, primers, and cement. Preparation includes, but is not limited to, taping, spackling, and repairing gypsum board surfaces.

5.2.4.5.2.1 Fixture Protection. Electrical outlets, covers, switch covers, windows, and fixtures shall be masked or removed before painting and uncovered or reinstalled upon work completion.

5.2.4.5.2.2 Property Protection. The Contractor shall move, reset, and protect furniture and equipment from damage (e.g.; paint dropping on Government and privately owned property during the performance of painting tasks).

5.2.4.5.3 Paint Application. The Contractor shall apply paint by brush, roller, or spray with prior approval by the COR, if spraying. Interior paint shall be applied in dust-free conditions in accordance with the manufacturer's recommendations. All coats shall be prepared so that the quality and type of paint match and meet manufacturer's recommendations.

5.2.4.5.3.1 Coat Application. The Contractor shall apply prime, intermediate, and finish coats as required. Each coat shall be sanded and dusted as prescribed by the paint manufacturer to produce a smooth finish that is free from runs, sags, or other surface preparation defects. The Contractor shall apply each coat of paint as a film of uniform thickness so that all surfaces including edges, corners, crevices, welds, and rivets receive a film thickness equivalent to that of adjacent painted surfaces. The Contractor shall allow sufficient time to elapse between successive coats to permit proper drying. This period shall be modified as necessary to suit adverse local weather conditions.

5.2.4.5.3.2 Finished Surface Quality. The Contractor shall apply paint to ensure that finished surfaces are free of runs, drops, ridges, waves, laps, brush marks, and any variations in color, texture, and finish. Paint surfaces adjoining other materials or colors shall be sharp and clean and shall not overlap.

5.2.4.5.3.3 Paint Specifications.

- a. **Paint Color.** The color of paint for entire walls, rooms, and exteriors of buildings will be selected by the Government from samples furnished by the Contractor or based on the relevant Technical Manuals. The Contractor shall use tints to match existing colors and colors specified and approved on DA Form 4284.
- b. **Lead Content.** Paint shall not exceed a .06% level of lead. Lead contents shall not exceed acceptable percentage of the total weight of solids in the dry paint film in accordance with environmental regulations. Paints containing lead shall not be used in or near residential areas, sleeping quarters, or where there is a likelihood of children coming in contact with the paint.
- c. **Lead Abatement.** The Contractor shall ensure proper protection and removal of particles and chips to the sites effective by lead paint removal in accordance with environmental regulations.
- d. **Mixing and Thinning.** Prior to application, the Contractor shall mix paints to ensure that they are completely blended and have no color variation, lumps, or foreign matter. The Contractor shall not mix paints from different manufacturers. The Contractor shall thin paint prior to application when necessary to suit conditions of surface, temperature, weather, or other application conditions. The Contractor shall not use more than one pint of suitable thinner per gallon, and the use of thinner shall not relieve the Contractor from obtaining complete hiding or cover of surfaces.

5.2.4.5.4 Other Painting Tasks.

5.2.4.5.4.1 **Dry Wall.** The Contractor shall tape, patch, and finish dry wall. The Contractor shall reset all nails, tape all joints, cracks, holes, and texture and paint dry wall. The Contractor shall use perforated tape and apply three coats of joint compound (mud) on all dry wall joints, cracks, and holes. The Contractor shall allow every coat of mud to dry completely before application of the next coat. The Contractor shall apply different types of wall textures such as smooth finish and roll-on finish.

5.2.4.5.4.2 **Finishing and Refinishing.** The Contractor shall finish and refinish different types of surfaces and materials. The Contractor shall sand, stain, varnish, shellac, and lacquer picture frames, tables, book shelves, desks, paneling, wainscot, doors, benches, stairways, chairs, railing, wooden floors, and any other surfaces or materials.

5.2.4.6 Sign Work

The Contractor shall repair, install, replace, remove, design, layout, paint, stencil, laminate, and mount permanent and temporary signage throughout the Installation, including directional, regulatory, informational, and other types of signs. Signage work shall also include, but not be limited to, designing, fabricating, and painting posters and safety signs. The Contractor shall paint traffic signs in strict conformance with the standards set forth in the Manual of Uniform Traffic Control Devices for Streets and Highways and Fort Lee policies. The Contractor shall maintain signs on buildings, structures, appurtenances, and along streets so that they are properly positioned, clean, and legible at all times.

5.2.4.6.1 Traffic Signs. The Contractor shall repair, install, replace, remove, and inspect traffic regulatory signs, warning signs, guidance and yield signs, informational, reflective, reserved, and safety signs on paved or unpaved areas. The Contractor shall also replace, install, remove, and inspect delineators and bridge markers (e.g. height limit, weight limit, and stop on red).

5.2.4.6.1.1 Traffic Sign Material Specification. The Contractor shall use Telspar posts for high visibility traffic signs, due to the suitable breakaway or yield design. The Contractor shall fabricate traffic signs in accordance with the Commonwealth of Virginia regulations on traffic signs.

5.2.4.6.1.2 Repair of Traffic Signs. Traffic signs which are taken down for repair shall be replaced immediately so as to avert accidents. All repairs and installations shall be in accordance with the Manual of Uniform Traffic Control Devices and the Installation Design Guide.

5.2.4.6.2 Informational Signs. The Contractor shall paint special signs such as quarter numbers, street signs, directional signs, regulatory signs, individual group reserved parking signs, safety signs, boundary signs, fire prevention signs, physical and classified activity access signs, control signs, off limit signs, restricted area signs, medical activity signs, and special events signs.

5.2.4.6.3 Sign Design. The Contractor shall design, lay out, draw, letter, and paint murals and special artwork in accordance with specifications provided by the customer through a valid work document. The Contractor shall determine the media, methods, design, layout, letter size, pictorial size, and other features for signs to be created, unless otherwise directed. The Contractor shall draw in detail from rough sketches, drawings, or photographs using chalk or paint. The Contractor shall lay out work in order to produce lettering and art features to scale, and shall perform free hand and gold leaf lettering. The Contractor shall fabricate silk screens, patterns, and templates. The Contractor shall design, fabricate, and paint or use a bonding machine for traffic signs, informational signs, directional signs, field training signs, and safety signs. The Contractor shall cut, punch, round corners, file, trim, assemble, install, and remove signs of different materials and gauges such as aluminum, galvanized sheet metal, plastic, wood, masonite, masonry, and black iron.

5.2.4.6.3.1 Type of Paint. The Contractor shall determine the type of paint best suited for the task involved and shall mix colors if necessary. Munitions and hazardous material storage signs shall be color coded as required.

5.2.4.6.3.2 Font. The Contractor shall use Series C (military block letter) on all Fort Lee Installation signs unless otherwise instructed by the COR.

5.2.4.7 Metal Work

The Contractor shall provide maintenance and repair or replacement of metal components of buildings and structures, installed building equipment, and kitchen equipment and shall construct and install metal components in support of other maintenance activities. Metal working shall include heating and bending to form metal shapes, drilling, torch cutting, hammer forging, grinding, sawing, and fitting of metal parts. The Contractor shall weld all types of metals using electric, acetylene, and/or inert gas-shielded welding processes. Processes include preheating, brazing, bead welding, track welding, flame

cutting, pressure welding, and heat treating. Welding shall be performed on light, heavy gauge, and headlined metals using flat, vertical, horizontal, and overhead positions.

5.2.4.7.1 Material Specifications. The Contractor shall accomplish all work utilizing materials which match or exceed the quality of similar components on the same building. The Contractor shall match gauges and materials of existing components when components are being attached or replaced.

5.2.4.7.2 Examples of Work. The Contractor shall perform metal work and sheet metal work to buildings, structures, and facilities to include, but not be limited to, the following areas and tasks:

5.2.4.7.2.1 Metal Components. Fabricating, installing, repairing, and replacing parts or complete assemblies as required for metal components of buildings (except door hardware), metal parts of installed building equipment, dining facility equipment, kitchen equipment, utility systems, roadway structures, drainage and walks to secure pilferable items.

5.2.4.7.2.2 Security Equipment. The Contractor shall fabricate, install, and repair security screens, partitions, and gates. For security screens, the Contractor shall imbed grid ends in the structure or weld to a frame on the inside.

5.2.4.7.2.3 Duct Systems. The Contractor shall design, lay out, fabricate, install, modify, repair, replace, and remove various types of duct systems such as heat, evaporative cooling, air-conditioning, exhaust, collector, smoke stacks, and ventilating systems. The Contractor shall fabricate, install, modify, and remove accessories to duct systems such as mufflers, silencers, filter racks, flexible connections, insulation, control dampers, quadrants, fire dampers, turning vanes, extractors, straightening grips, mixing boxes, and gravity dampers.

5.2.4.7.2.4 Welding. The Contractor shall weld all types of metals to include, but not be limited to, copper, brass, aluminum, steel, galvanized steel, stainless steel, iron, cast iron, and cast steel. Processes to be used include arc, heli-arc, acetylene, and inert gas welding. Welding shall be performed on hardened metals of light and heavy gauges; in flat, vertical, and overhead positions; and in confined entry spaces above and below ground. Processes include preheating, brazing, bead welding, tack welding, spot welding, butt welding, frame cutting, pressure welding, and heat treating. Welding shall comply with Subpart Q of 29 CFR 1910, OSHA General Industry Standards.

5.2.4.7.2.5 Fences and Cages. The Contractor shall repair all perimeter fences, transformer fences, gates, and other security cages to ensure that unauthorized entry is not made to restricted areas. Repairs include, but are not limited to, repairing holes in chain link fencing and wire cages; stringing barbed wire; replacing or resetting fence support stanchions; replacing or repairing hinges and locking devices; removing rust and corrosion; and painting fences.

5.2.4.7.2.6 Gutter Systems. The Contractor shall design, fabricate, install, repair, replace, and remove all types of gutters (e.g. build up gutters), downspouts, and other components of gutter systems. The Contractor shall match existing gutters and downspouts in design and gauge of materials such as ogee, K-type, box, half round, and corrugated (round and rectangular) downspouts; scuppers; conductor heads; expansion joints; inside and outside miters; hangers, elbows, strainers;

spikes and ferrules; sumps; and splash pans. The Contractor shall use materials such as galvanized metal, aluminum, and copper.

5.2.4.7.2.7 Flashing. The Contractor shall design, fabricate, install, repair, replace, and remove all types of flashing, molding, and fascia such as gravel stop; 90° standard drip edge, window and door lintels, coping, building set backs, sills, spandrels at grade and under partitions, roof valley, hip, ridge, and mansard roof flashing, counter flashing, parapet wall flashing, reglet, expansion joints, skylight flashing, drywall molding, tile molding, louvers, roof and wall penetrations, pitch pans, termite shields, mullion covers, and any special flashing, fascia, and moldings.

5.2.4.7.2.8 Doors and Frames. The Contractor shall install, repair, replace, and remove metal doors, metal kick plates to wooden doors, gussets, trim, tracks, skins, metal covering of doors for security, overhead doors (track and cylinder rolled), sliding doors (metal and wood), access doors, and frames. The Contractor shall install, repair, replace, and remove components such as cables, drums, springs, sprockets, rollers, tracks door panels, track hangers, gussets, handles, overhead door chains (pull chain and gear chains), guards, weather-stripping, fastening devices, channels, hinges, eyebrows, personnel doors, and metal window frames.

5.2.4.7.2.9 Awnings. The Contractor shall design, fabricate, install, repair, replace, and remove metal awnings such as carports, porches, decking, walkway covers, doorway foyers, metal roofs, metal sheds, and other structures. The Contractor shall match gauges of metal and designs of existing components on the facility when replacing or installing new components.

5.2.4.7.2.10 Metal Containers. The Contractor shall design, fabricate, install, repair, replace, and remove containers such as storage bins, electrical wire troughs, cabinets, shelves, boxes, pans (splash and drip), tanks, pans with drains, troughs, scopes, and shields for equipment and machines.

5.2.4.7.2.11 Paneling. The Contractor shall design, fabricate, install, repair, replace, and remove metal paneling for different types of applications such as fire protection, health, security, and safety requirements; and general appearance improvements. The Contractor shall layout and fabricate panel designs such as quilting (square and diamond shape), cross breaking, corrugated, ribbed, V-beam, and other designs which match existing paneling. The Contractor shall use various gauges of stainless steel, copper, and galvanized materials to match materials on existing components to which the item is being connected.

5.2.4.7.2.12 Lagging. The Contractor shall lag pipes, ducts, and equipment to preserve the insulation from weather deterioration. Lagging, used here, shall mean a covering, e.g., of metal, of polyurethane, etc., placed over insulation.

5.2.4.7.2.13 Venting. The Contractor shall design, fabricate, install, repair, replace, and remove breechings, stacks, caps, spark arrestors, bird screens, exhaust, fresh air intakes, combustion air, relief, and all related fixtures on gas fired equipment, fireplaces, or any type of system or equipment which requires venting.

5.2.4.7.2.14 Windsocks. The Contractor shall repair, replace, and install windsocks, windsock sleeves, and posts. The Contractor shall be required to install and replace windsocks located in remote areas, and in forested areas.

5.2.4.7.2.15 Lifts in Buildings. The Contractor shall perform repairs and maintenance to all types of lifting equipment, hoists (electrical, manual chain, manual rope, and pneumatic), chainfalls, monorails, and power winches. Components consist of, but are not limited to, motors, overhead wires, hoist gear boxes, flexible couplings, wire rope, cable, chains, brakes, motor control centers, slings, and hooks. Faulty components that cannot be adjusted or repaired shall be replaced with working components. All completed work shall be free from missing components or defects that would affect the intended use of the equipment or would prevent any electrical, mechanical, or structural component from functioning in accordance with the design intent.

5.2.4.7.2.16 Miscellaneous Metal Work. The Contractor shall design, fabricate, install, repair, replace, and remove hoods, kitchen equipment, trailer skirting, curtain rods and extensions, TV brackets, alarm grids, prefab metal structures, jail doors, and other metal work as required by valid work documents.

5.2.4.8 Electrical Systems

5.2.4.8.1 General. The Contractor shall maintain, repair, and install electrical system components including, but not limited to, wiring systems, conduit systems, cable systems, conductors, switches, receptacles, outlets, device plates, grounds, service equipment, motor control centers, control switchboards and consoles, lightning protection systems, fixtures, electrical kitchen equipment, kitchen and building ventilating fans, sump pumps, garbage disposal units, and electrical heaters in all applicable buildings, structures, and facilities. Technical Exhibit 5.2-003 lists types of systems and equipment which are indicative, but not inclusive, of the total requirements for which the Contractor is responsible for under this Functional Area. Additional electrical maintenance requirements for motors, motor controllers (e.g., starters, contactors, or variable speed controllers), equipment status monitoring systems, pump controls, and similar electrical apparatus that is appurtenant to plant and mechanical equipment are included in the applicable section for the maintenance of that equipment. The Contractor shall also perform other electrical work such as: providing temporary electrical service in emergencies; providing emergency lighting systems; determining estimates; testing circuits and load; providing standby electricians for special events; and escorting uncleared personnel.

5.2.4.8.1.1 Interior Electrical Systems (Including Electrical Equipment and Appliances). A building or facility receives electrical power at one or more points from which the power is delivered or made available to the various items of utilization equipment by means of the building electrical distribution system. The term interior electrical system encompasses all components of the building distribution system including wiring, disconnects (switches and breakers), electrical panels, cabinets, load centers, transformers, capacitors, conduit, ducts, busways, meters and instrumentation; various type of controls and control systems; and lighting systems, as well as other systems and equipment and their related components, including fire alarm systems, auxiliary electrical generating systems, auxiliary lighting systems, and certain types of interior signaling systems. The

Contractor shall repair, maintain, install, and test interior electrical systems and components. The interior electrical systems and components are found in a wide variety of buildings ranging from storage areas to complex electronic testing and proving areas, as well as open test areas and facilities. The Contractor shall perform electrical repairs, replacements, maintenance, and testing in a manner which assures a safe and reliable electrical system. All work shall conform to the requirements for the environment in which the equipment is located.

5.2.4.8.1.2 Exterior Electrical Systems. The Contractor shall be responsible for the exterior lights that are attached to the building structure or that are installed at ground level and used to illuminate the facade of a building, as well as the related system components and controls (e.g., photocells, time clocks, contactors, etc.). The Contractor shall respond to work directives for problems which may be potentially related to the operation of this system. If upon investigation, it is determined that the problems are beyond the scope of the Contractor's responsibility, the Contractor shall notify the COR.

5.2.4.8.2 Temporary Repairs. The Contractor shall accomplish temporary repairs when it is essential to prevent damage to a facility or to minimize the impact to Government operations. The Contractor shall obtain approval from the COR for the method and materials to be used to accomplish temporary repairs. In case of an emergency requiring temporary repairs outside normal scheduled working hours, the Contractor shall notify the COR within two hours after the beginning of the next scheduled work day and shall provide a description of the method used, the reason for such repairs, and the proposed method and time to complete the permanent repairs.

5.2.4.8.3 Materials Specifications. Electrical materials and equipment utilized by the Contractor shall comply with the latest edition of the codes of the National Fire Protection Association and the National Institute of Standards and Technology (NIST). All maintenance and equipment used at medical and dental facilities and buildings shall comply with the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). All work shall conform to the requirements of the National Electrical Code (NFPA No. 70-Most Recent Edition) where applicable.

5.2.4.8.4 Equipment. The Contractor shall use Test, Measurement, and Diagnostic Equipment (TMDE) expeditiously and accurately to complete testing and diagnostic procedures that are required to execute the work for which the Contractor is responsible. The Contractor shall maintain the TMDE in accordance with industry standards.

5.2.4.8.5 Wiring. The Contractor shall repair, maintain, install, and test interior electric wiring and wiring systems. Types of components and systems include: electrical conduit of all types including Electrical Metallic Tubing (EMT), rigid metal conduit, intermediate metal conduit, flexible metallic tubing, flexible metal conduit, liquid tight flexible conduit, and rigid nonmetallic conduit in sizes ranging from 1/2" to 6", including all associated hardware and fittings, bending, cutting, and threading as applicable; wire, wiring, cabling, power cabling, open wiring, feeder circuits, branch circuits, fixture wiring, and flexible cabling and cords ranging in size from #22 AWG to 750 MCM, and from single conductor to multi-conductor circuits; all switches, outlets, junction boxes, terminal boxes, wireways, underfloor assemblies, busways, electrical floor assemblies, and multi-outlet assemblies.

- 5.2.4.8.5.1 Replacement Wiring. The Contractor shall utilize wiring methods (e.g., concealed wiring, etc.) that is architecturally, electrically, and mechanically equivalent to the existing electrical systems design and installation. Replacement parts and components shall aesthetically match the existing installation and/or the decor of the facility. The Contractor shall obtain approval from the COR prior to using wiring methods, or parts and components, that are not consistent with the existing installation.
- 5.2.4.8.5.2 Romex. The Contractor may use nonmetallic-sheathed cable (to include types NM, NMC, and UF), generically referred to as romex, as permitted by the National Electrical Code (NEC), but only in temporary (World War II) facilities of wood frame construction, and family dwelling units or other quarters that utilized type NM cable during the original construction. Romex shall not be installed, exposed, or used in other types of facilities without the prior approval of the COR.
- 5.2.4.8.5.3 Aluminum Conductors. The Contractor shall not install aluminum conductors as part of a building wiring system without the prior approval of the COR.
- 5.2.4.8.5.4 Electrical Nonmetallic Tubing. The Contractor may use electrical nonmetallic tubing (ENT) as permitted by the NEC, but only where concealed and in wood frame construction.
- 5.2.4.8.5.5 Rigid Nonmetallic Conduit. The Contractor shall not use rigid nonmetallic conduit within the interior wiring system of a structure, except for below grade or in slab construction, without the prior approval of the COR.
- 5.2.4.8.5.6 Underground Utility Warning Tape. The Contractor shall provide an underground utility warning tape containing a locator detectable strip for all new or replacement underground electrical installations. The tape shall be installed a minimum of 12" above the raceway or cable, but in no case less than six inches below the surface.
- 5.2.4.8.6 Testing and Troubleshooting. The Contractor shall accomplish testing, troubleshooting, and diagnostic procedures to properly diagnose the cause of a failure or malfunction of systems/equipment for which the Contractor is responsible. The Contractor shall maintain and utilize procedures which will minimize the time required to identify, isolate, and correct the failure or malfunction.
- 5.2.4.8.6.1 Electronic Equipment. The Contractor shall be responsible for all the electronic equipment and components of the systems encompassed in the scope of this section. The Contractor shall repair or replace failed electronic components (e.g., capacitors, resistors, transistors, rectifiers, and silicon controlled rectifiers (SCRs), and repair printed circuit boards to include the replacement of failed discrete components (e.g., semiconductor devices or integrated circuits).
- 5.2.4.8.6.2 Monitoring Systems. The Contractor shall troubleshoot and repair electric or electronic monitoring systems (e.g., cold storage facility and equipment status monitoring and alarm system, or leak detection systems) and fuel dispensing electronic monitoring and recording systems.
- 5.2.4.8.6.3 Other Equipment and Systems. The Contractor shall provide testing, measurement, and diagnostic readings for electrical systems, services, feeders,

circuits, and equipment for use in evaluations, design efforts, data for studies, load analysis, and similar requirements.

5.2.4.8.7 Lighting. The Contractor shall repair, maintain, install, and test interior electrical lighting and lighting systems. Types of components and systems include: switches and low voltage switching systems, dimmers and dimming systems, photo electric eyes and components, timers, magnetic contactors (lighting contactors), submersible and waterproof fixtures, explosion proof and vapor tight systems, temporary lighting and lighting systems including Christmas lighting and special purpose lighting, and various types of lighting systems including indoor lighting, outdoor lighting, security lighting, and emergency lighting.

5.2.4.8.7.1 Energy Conservation. The Contractor shall measure lighting luminous intensity for adequacy of purpose and energy conservation purposes. The Contractor shall disconnect lighting systems or their components for energy conservation and reconnect lighting previously disconnected for energy or other purposes.

5.2.4.8.7.2 Bulb Replacement. The Contractor shall replace light bulbs in areas other than those identified as a Self-Help requirement or in cantonment areas where the type of lamp is not available through the Self-Help program. The Contractor shall replace the lamps in fixtures which require special tools or equipment to replace the lamp, in all High Intensity Discharge (HID) type fixtures, in fixtures above stairways or other places of difficult access, in mechanical and equipment rooms, in crawl spaces, and in fixtures where lamp replacement cannot be accomplished safely from a step ladder six feet or less in height. The Contractor shall be responsible for marquee, sign, billboard, and similar lighting.

5.2.4.8.8 Directed Services. The Contractor shall provide the services indicated in this paragraph as directed by the COR. The Contractor shall perform directed work in conjunction with work being accomplished by other methods, and on facilities, systems, and equipment which have been installed, constructed, improved, or altered during the course of the Contract. These services are indicative, but not inclusive, of the types of services to be provided by the Contractor.

- a. Provide temporary electrical service, circuits, and lighting for special events and other requirements.
- b. Provide, or remove, the raceways for Automatic Data Processing Systems, Intrusion Detection Systems, Signaling Systems, Communications Systems and similar installations. Raceway shall include "Tele-power poles". Raceways installed in support of other systems shall be provided with a poly pull line unless specified otherwise.
- c. Install Government-furnished equipment and system components. Remove equipment and system components that are to remain the property of the Government. The cost of Government-furnished equipment shall not contribute to the material cost in figuring the level of work.
- d. Connect, disconnect, or provide circuits for kitchen equipment, equipment in place, and all other types of electrical utilization equipment.

- e. Repair, maintain, and install electrical wiring in buildings, structures, and facilities including, installing and repairing electrical wiring systems and associated switches, distribution panels, light sockets, and outlet boxes.
- f. Measure, cut, thread, bend, assemble, and install conduit; insert, splice, and connect wires to fixtures, outlets, switches, receptacles, and power sources.
- g. Install wiring from blueprints, wiring diagrams, and/or sketches.
- h. Locate, diagnose, and repair trouble occurring in power circuits, controls, switches, rheostats, thermostats, flow meters, stop controls, and motor control centers.
- i. Test circuits and equipment.
- j. Install, maintain, and repair lightning protection systems.
- k. Install, maintain, and repair underground wiring to associated control panels and to trailer sites.
- l. Inspection of rides for special events.

5.2.4.8.9 Transformers and Regulators. The Contractor shall repair, maintain, install, and test interior electrical transformers and regulators. Types of components include: single and polyphase transformers; 15kV and 22kV transformers; transformers under 600 volts nominal; auto transformers; potential transformers; current transformers; control voltage transformers; multiple secondary output transformers; isolation transformers, and voltage and current regulators. Transformers vary in application from small open units to large pad mounted polyphase units and are located both indoors and outdoors. The Contractor shall respond to power outages and restore power in accordance with Functional Area 5.4, Utilities Systems Operations and Maintenance, of this Contract.

5.2.4.8.10 Building Service Entrance. The Contractor shall repair, maintain, install, and test building services entrance. Types of components include: fused and non-fused service disconnects from 30 amp to 2000 amp, and single phase to polyphase, conduit, raceways, fittings, hardware, wiring, service masts and supports, weather heads, grounds, grounding systems and conductors, ground rods, fuses, circuit breakers, ground fault protection devices to 600 volts, surge arrestors, lighting protection devices; and both overhead and underground service entrance cables including all connections, drip loops, weatherproofing insulation, conduit, and fittings.

5.2.4.8.11 Load Centers. The Contractor shall repair, maintain, install, and test electrical distribution and load centers. Types of components include: main service power circuit breakers from 30 amp to 2000 amp, including manual, automated, and ground fault interrupter (GFI) types; load distribution centers, both power and lighting; bus systems; raceways; distribution panels; branch circuits; and load circuit breakers varying in size from 5 amp to 600 amp, single and polyphase.

5.2.4.8.12 Motors and Motor Control Centers. The Contractor shall repair, maintain, install, and test electrical motors and motor controls. Types of components include: single and polyphase motors from fractional horsepower to 350 horsepower and varying in operational voltages from low voltage direct current to 2400 volts AC; continuous and intermittent duty motors; motor feeders; motor disconnects; motor

circuit conductors; overloads; fuses; circuit breakers; motor controllers; contactors; coils; automatic door closures, motors and controls; control circuits; motor control devices such as start/stop stations; pressure switches, gear driven limit switches, limit switches, mercooid switches, and control and power transformers. Motors and motor control centers are located indoors and outdoors. The Contractor shall repair, maintain, and install belts and shaft guards, motor pulleys, belts, couplers and couplings and electric motor bearings. The Contractor shall be responsible for the following electrical maintenance items:

- Installing, testing, maintaining, and repairing electric motors.
- Inspecting and replacing bearings.
- Cleaning, oiling, greasing, and painting motors.
- Rewinding and applying insulating paint to windings of electric motors (both single and three phase type) ranging from fractional to 800 horsepower (hp).
- Replacing defective capacitors, cutout switches, and brushes.
- Checking controls and components associated with motor controls and circuits.
- Troubleshooting electric motors on location as required.
- Fabricating sleeve bearings, washers, rings, bushings, and other parts related to electric motors; cutting and under cutting motor generator commutators and metallizing of motor shafts.

5.2.4.8.13 Grounding Systems. The Contractor shall repair, maintain, install, and test interior electrical grounds and grounding systems. Types of components include: ground rods, grounding conductors, ground clamps, ground wells, ground lanes, helicopter tie-downs, and fueling ground points at petroleum oils and lubricants (POLs) and the helipad.

5.2.4.8.14 Furniture Wiring Repairs. The Contractor shall be responsible for the wiring to the outlet for modular furniture, work centers, and moveable partitions that are electrified. When directed, the Contractor shall install or remove the wiring from the outlet to the point of the electrical service connection to the modular furniture, and shall accomplish minor electrical repairs to the modular furniture's electrical wiring, devices, and lighting fixtures.

5.2.4.8.15 Raceways. The Contractor shall be responsible for the raceways for Automatic Data Processing Systems, Intrusion Detection Systems, Signaling Systems, Communications Systems, and similar installations. Raceway, as used here, shall include "Tele-power poles". The Contractor shall locate and mark the location of raceways and wiring system components, trace circuits, and identify feeder and branch circuit protective devices.

5.2.4.8.16 Clock and Bell Systems. The Contractor shall be responsible for maintenance and repair of integrated clock systems and bells.

5.2.4.8.17 Traffic Devices. The Contractor shall be responsible for the traffic signal controllers (computerized), to include traffic flow sensors, timing controllers, signaling devices, and cable.

5.2.4.8.18 Electrical Requirements at Fort Lee Helipad. The Contractor shall be responsible for the facilities at the Fort Lee Helipad. The following navigational equipment shall be maintained by the Contractor:

- a. Navigational lighting to include the appurtenant wiring, controls, and equipment. The operational voltage is 120 - 240 single phase at 60Hz.
- b. Auxiliary lighting (e.g., wind cone and wind tee) and pole mounted lights.
- c. Aviation obstruction lighting, except for those installed on steel structure towers that are dedicated only for communication equipment or those that are installed on utility pole structures.

5.2.4.8.19 Industrial Air Compressors. The Contractor shall inspect, maintain, and install air compressors including compressor, storage tanks, piping, controls, and accessories. The Contractor shall repair, clean, make adjustments to, and replace components of compressors and mechanical systems on an as-required basis to ensure proper operation. Work shall include, but is not limited to, trouble-shooting and testing compressors and associated devices such as air dryers, purifier piping, distribution piping, valves, and auxiliary equipment.

5.2.4.8.20 Appliance Standards. The Contractor shall replace Government-furnished major appliances as directed by the COR in facilities other than family housing units with other Government-furnished appliances. The cleaning of range hoods/ducts is the responsibility of the Government.

5.2.4.8.21 Miscellaneous Responsibilities. The Contractor shall operate, maintain, repair, install, and alter all interior electrical systems, alarm systems, auxiliary power and lighting systems, electrical systems and controls used to operate targets on training ranges, and a variety of electrical fixtures, tools, and appliances. The Contractor shall ensure that electrical systems, system components, appurtenant parts, and equipment are reliable, efficient, functional, safe, and continually available for their intended purpose as directed by the COR and as specified herein. The Contractor shall operate, maintain, repair, install, and alter all interior electrical systems and related systems to include, but not limited to:

5.2.4.8.21.1 The installation, maintenance, and repair of electrical wiring to include tightening or reinstallation of loose wires and connections, replacement of bare conductors, convenience outlets, switches, and dimmers.

5.2.4.8.21.2 The operation, maintenance, repair, and installation of electrical disconnects such as switches and circuit breakers; including tightening connections, replacing tripping elements, adjusting and cleaning contacts and operating mechanisms, and testing and adjusting relays.

5.2.4.8.21.3 The installation, maintenance, cleaning, and repair of electrical cabinets, panels, and load centers including balancing electrical loads, labeling to identify circuits and feeders, the maintenance and repair of disconnects contained therein, and the replacement of fuses.

- 5.2.4.8.21.4 The installation, maintenance, and repair of transformers, capacitors, and power filters.
- 5.2.4.8.21.5 The installation, maintenance, and repair of conduit, ducts, and busways to include checking to ensure that entrances and fittings are properly installed to prevent a means of access for moisture, dirt, oil, and other foreign material. The installation, maintenance, and repair of equipment, such as, power loading ramps, electrical hoists, conveyers, battery chargers, door operators, motors, motor controls, well pumps and controls, cardboard/paper compactors, form presses, steam irons, score boards, and car wash equipment.
- 5.2.4.8.21.6 The installation, maintenance, repair, and calibration of installed meters, instruments, and recorders such as ammeters, voltmeters, kilowatt meters, flowmeters, temperature and pressure meters, recorders, frequency meters, and hour meters.
- 5.2.4.8.21.7 The installation, maintenance, repair, and calibration of various electrical and electronic control systems and their related components, including electronic control systems for clocks, post siren, combustion controls on boilers, and control systems (to include computerized systems) on heating and cooling systems.
- 5.2.4.8.21.8 The installation, maintenance, and repair of lighting systems, to include replacing various types of lamps, ballasts on fluorescent lights, and complete lighting fixtures. The fabrication of extension cords, power cords, and lighting sets.
- 5.2.4.8.21.9 The installation, maintenance, and repair of interior signaling systems such as lamp and buzzer-type call systems; bell, buzzer, carillon, and chime systems; magnetic signaling and lamp-type paging systems, and individual smoke alarms.
- 5.2.4.8.21.10 The installation, maintenance, and repair of auxiliary and emergency lighting systems utilized for interior illumination and exit lighting. These systems primarily utilize a battery as the power source and are automatically operated upon loss of electric power to the primary lighting system.
- 5.2.4.8.21.11 The Contractor shall install, maintain, and repair electrical circuits and conduit supplying power to J-SIIDS Control Units, monitors, and transmitters, and their associated telephone terminal boxes, between the monitor consoles and their associated telephone terminal boxes. The Contractor shall also install conduit connecting the system components. Commercial intrusion detection systems (other than J-SIIDS) shall be installed by the Contractor.
- 5.2.4.8.21.12 The Contractor shall provide response to all electrical emergencies and restore power in the most expeditious manner. This emergency work shall include eliminating exposed energized wires, arcing in electrical circuits, tripped power circuit breakers, burning wire insulation, failure of fixtures and equipment, and dimming of security or building/facilities lighting.
- 5.2.4.8.21.13 The Contractor shall coordinate his interior electric work plan, as appropriate, with activities involved in the operation and maintenance of electrical facilities and distribution systems.

5.2.4.9 Plumbing and Steamfitting

The Contractor shall be responsible for all plumbing systems and their associated equipment and components. The Contractor shall provide the proper installation, maintenance, repair, and replacement as approved and necessary of all plumbing, potable and non-potable water, heating, gas, steam, hot water, high-temperature high-pressure hot water and chilled water systems and their associated equipment and components, fittings, and piping. The Contractor shall maintain, repair, install, inspect, remove, replace, and modify all plumbing equipment and components for water, sewer, swimming pools (indoor and outdoor), inert gas, natural gas, air vacuum, compressed air systems, steam, and petroleum fuel (POL) equipment. The Contractor shall install, maintain, and repair all types of special equipment or fixtures and replace old equipment, components, and fixtures requiring plumbing connections. All material, equipment, components, fixtures, and workmanship associated with plumbing systems shall be in accordance with applicable sections of the Uniform Plumbing Code (UPC), Army Regulations, and Technical Manuals.

5.2.4.9.1 Plumbing and Steamfitting Services. The Contractor shall install, maintain, repair, replace, modify, relocate, remove, and inspect plumbing and steamfitting equipment, components, systems, fixtures, instruments, valves, and other associated equipment. These services include, but are not limited to, the following types of work:

5.2.4.9.1.1 Removing blockage from drain lines, both interior and exterior sewers, floor drains, fan coil units, air handling units, stacks, vents, and storm drainage systems.

5.2.4.9.1.2 Adjusting, repairing, or replacing leaky joints, faucets, and other outlets as necessary to maintain proper and efficient operation of all related plumbing and steamfitting systems including, but not limited to, hot water systems, chilled water systems, potable water systems, compressed and vacuum air systems, valves, inert and natural gas systems, and other associated systems, equipment, and components.

5.2.4.9.1.3 Installing and repairing domestic, industrial, and commercial hot water heaters, hot water storage tanks, and plumbing fixtures, equipment, and components, including commodes, urinals, kitchen and utility sinks, water fountains, frost-proof hydrants, showers, bathtubs, lavatories, shower pans, garbage disposals, dishwashers, fan and air handler coils, valves, pumps, and associated equipment and components.

5.2.4.9.1.4 Installing, maintaining, repairing, and replacing pipe insulation including, but not limited to, fiberglass and armorflex insulating materials. The Contractor shall install protective metal covering to the insulation.

5.2.4.9.1.5 Placing and connecting water, air, natural gas, sewage and water/storm fixtures to such as sewage lines, water closets, lavatories, showers, sinks, gas heaters, stoves, air compressor equipment, shop hydraulic vehicle lifts, cooling towers, grease traps, garbage disposals, dishwashers, floor drains, condensate and drip pans, circulation systems for heating and cooling systems, and associated equipment and components.

- 5.2.4.9.1.6 Cutting or drilling holes and openings in walls, ceilings, floors, chases, or slots, and setting sleeves, thimbles, or inserts to provide passage and supports for pipe, fittings, equipment, and components.
- 5.2.4.9.1.7 Measuring, cutting, and threading pipe, assembling pipe sections, pipe welding and brazing, and hanging or laying assemblies in position.
- 5.2.4.9.1.8 Laying and joining concrete, clay, PVC, copper, CPVC, Quest, wardflex, brass, steel-alloy, and piping in accordance with proper trade methods to insure joints are properly aligned, graded, and sloped to provide necessary and proper drainage and services.
- 5.2.4.9.1.9 Maintaining and repairing interior and exterior plumbing waste lines, stacks, vents, mixing, ball check, backflow, shower, waste, overflow valves, water coolers, commodes, sinks, lavatories, fire hydrants, frost proof hydrants, PIV and fire department connections, sprinkler systems, fan coil units, air handler coils, steam, hot water, chilled water, traps, valves, drainage systems, commercial, industrial, domestic hot water heaters, and storage tanks.
- 5.2.4.9.1.10 Replacing bolts, pipe hangers, strainers, drain covers, insulation, traps, valves, fittings, equipment, and components that are damaged or missing to maintain continuous customer services.
- 5.2.4.9.1.11 Installing, maintaining, repairing, and/or replacing specialized medical and dental equipment and components required for the clinic and dental facilities including, but not limited to, potable water, natural gas, air vacuum, compressed air and oxygen systems, waste lines sterilizing equipment and other specialized equipment associated with health services in accordance with code compliance and Army regulations.
- 5.2.4.9.1.12 Checking and inspecting equipment for proper operation, maintenance, repair, and/or replacement at required intervals per applicable technical manual.
- 5.2.4.9.1.13 Performing repair and overhaul work on pumps (e.g., disassembling pumps, replacing worn impellers, shafts, bearings, gland seals, ream bearings, and reassembling). Repairing or replacing sump pumps, connecting all interconnecting piping from pumping systems to service lines, replacing/servicing check valves, gate valves, globe valves, flow control valves, circuit setting valves, motorized and pneumatic valves, and pressure gauges. Removing, repairing, and installing entire pumping systems and making modifications to piping systems.
- 5.2.4.9.1.14 Performing repair and overhauling work on equipment and components found in pumps, (e.g., boiler feed water systems, condensate return pump systems, hot water circulating systems, chilled water systems, potable water systems, swimming pool circulation and chemical feed systems, and compressed air systems).
- 5.2.4.9.1.15 Installing, repairing, modifying, and adjusting all types of gas and oil-fired appliances and equipment such as hot water heaters, furnaces, stoves, and burners.

- 5.2.4.9.1.16 Connecting steam, gas, water, and sewer drainage lines to kitchen, medical clinic, dining facilities, domestic, commercial, and industrial facilities located on the Installation.
 - 5.2.4.9.1.17 Maintaining, installing, and repairing mixing/temperature control valves for x-ray equipment and film processing equipment and components.
 - 5.2.4.9.1.18 Maintaining, installing, repairing, adjusting, and/or replacing steam, compressed air, and oxygen lines in the clinic and dental services and the accompanying alarm systems as required.
 - 5.2.4.9.1.19 Inspection of all buildings with delineation of remedial measures.
 - 5.2.4.9.1.20 Elimination of existing and potential cross-connections.
 - 5.2.4.9.1.21 Disconnecting and capping of utilities of water, sewer, gas, and electric services for facilities scheduled for demolition. Maintaining a current listing and modifying the shop prints to show permanent disconnections of the utilities. The Contractor shall ensure that safety regulations are followed to prevent accidents to life or property.
- 5.2.4.9.2 Piping Systems. The Contractor shall be responsible for all domestic water, wastewater, natural gas, and vent piping to include, but not limited be to, piping located inside and outside of buildings and underground water, gas, storm drainage, and sewer piping. The Contractor shall install, maintain, replace, relocate, modify and/or repair all piping distribution systems above and below ground, in tunnels, or elsewhere. The Contractor shall provide necessary, and as required, potable water lines with approved backflow prevention devices.
- 5.2.4.9.2.1 Types of Piping. Types of piping the Contractor is responsible for shall include, but is not limited to, concrete, galvanized, copper, cast iron, clay, poly-vinyl chloride, iron piping, CPVC, ABS, Wardflex, IPS and CTS gas pipe, asbestos concrete, ductile iron, black iron, and brass. The pipe sizes range from 1/8" to 16" and storm drainage sizes up to 48".
 - 5.2.4.9.2.2 Waste Lines. The Contractor shall install, maintain, replace, relocate, modify, and repair all air, gas, potable and non-potable water, waste water drain lines, sewers, vent lines stacks, commercial, domestic, and industrial water lines.
 - 5.2.4.9.2.3 Piping Obstructions. The Contractor shall locate and remove obstructions using trade practices, methods, and equipment from water lines, waste lines, storm sewers, and gas lines. The Contractor shall eliminate sluggish drainage in sinks, wash basins, tubs and showers, floor drains, urinals, commodes, garbage disposals, dishwashers, water coolers, and other drains.
- 5.2.4.9.3 Plumbing Fixtures. The Contractor shall be responsible for all types of domestic, commercial, and industrial water heaters, hot water storage tanks, and plumbing fixtures, including but not limited to, commodes, urinals, kitchen and utility sinks, garbage disposals, dishwashers, drinking fountains, showers, bathtubs, grinders, spouts, traps, faucets, sprayers, water closets, flushometers, automatic flushometers, lavatories, hot water temperature control devices, and associated equipment and components.

5.2.4.9.3.1 Water Heaters. The Contractor shall be responsible for gas fired, oil fired, steam generated, and electric water heaters. The Contractor shall install, maintain, and repair all steam and high-temperature high-pressure hot water generators, gas fired water heaters, oil-fired water heaters, electric water heaters, electric steam generators, booster heater, and hot water storage tank facilities.

5.2.4.9.3.2 Fixtures. The Contractor shall install, maintain, and repair all plumbing fixtures, equipment, and components, including showers, bathtubs, lavatories, water closets, water coolers, urinals, kitchen sinks, laundry sinks, utility sinks, disposal units, grinders, and all associated plumbing fixtures.

5.2.4.9.4 Sump and Circulating Pumps. The Contractor shall be responsible for all sump pumps, hot water circulating pumps, chilled water pumps, dual temperature pumps, and potable water pumps. The Contractor shall clean sand, dirt, and other debris from pits and sump pump pits. The Contractor shall inspect and perform repair and overhaul work on pumps (e.g. disassemble pumps; replace worn impellers, shafts, and bearings for perfect fit; and reassemble pump and proper align pump couplings for proper operation). The Contractor shall inspect, repair, or replace sump pumps, medical vacuum centrifugal pumps, connect interconnecting piping from pumping systems to service lines, and replace check valves, gate valves, globe valves, ball valves, flow control valves, circuit setting valves, motorized and pneumatic valves, pressure gauges, and temperature control devices. The Contractor shall inspect, repair, install, and replace pumping systems when required and make alterations to piping systems. The Contractor shall remove and properly dispose of debris collected in sump systems and pits. The Contractor will ensure that all flood alarm systems, located in the basement facilities, are in proper operating order where applicable.

5.2.4.10 Swimming Pool Maintenance

The Contractor shall maintain the swimming pool in accordance with Army Technical Manuals and accepted industry standards. All required cleaning and maintenance of the pools that necessitates a pool shutdown shall be approved by the COR. Fort Lee currently has one indoor swimming pool (Building 8050), two adult outdoor pools (Buildings 8030 and 9016), and two baby outdoor pools (Building 8050). The outdoor pools are maintained on a seasonal basis opening from Memorial Day until Labor Day (with some special extension requests for longer open periods). Tasks associated with the maintenance of the pool include, but are not limited to, the following:

5.2.4.10.1 Circulation Pumps and Motors. The Contractor shall maintain, repair, or replace circulation pumps and motors as necessary to ensure proper operation.

5.2.4.10.2 Metal Components and Unit Exteriors. The Contractor shall remove dirt and grime from bare metal components and unit exteriors to prevent rusting.

5.2.4.11 Fire Alarm Systems

The Contractor shall perform maintenance and repair of fire detection and alarm systems, and all associated components. The detection and alarm systems include, but are not limited to, pull stations; duct detectors; heat detectors; 24v smoke detectors; annunciation panels and accompanying indicators; 110v smoke detectors; warning devices (such as horns, sirens, and strobes); detectors connected to suppression systems; flow switches; smoke and fire dampers; remote annunciators; duct detectors;

manual pull stations; heat detectors; control panels; monitors; batteries; consoles; recording equipment; transmitters; local alarms such as bells and horns, and evacuation alarm lamp assemblies; batteries; valve position supervisory devices; zone circuits; controls and devices for operating fire extinguishing systems; and water flow detectors. The Contractor shall replace lamps, globes, and gaskets for the exterior fire alarm/reporting systems as directed by the COR. All work shall be in accordance with the NFPA National Fire Alarm Code, current edition.

5.2.4.11.1 Government Access. The Contractor shall note that the Government has access to all fire detection and suppression systems in case of emergencies or for other Fort Lee Fire Department purposes. The Contractor shall contact the Fort Lee Fire Department point-of-contact, to be determined upon contract award, prior to and upon completion of all work. The point-of-contact shall also be used by the Contractor to report any special problems or circumstances which require Fire Department inspections. The Fire Department will reset alarm systems to operational status due to water surges, accidental activation, fires, and so on.

5.2.4.11.2 Standby Replacement Parts. Due to the critical nature of the fire detection and alarm systems, the Contractor shall maintain standby stock which shall include, but not be limited to, zone modules, zone motherboards, battery packs, antennas, manual pull stations, heat detectors, smoke detectors, horns, strobes, indicator lamps, etc. The Contractor shall notify the COR of each use of a standby stock item with 24 hours of the use. The Contractor shall ensure that minimum quantities of standby stock are replenished within five days of use. The Contractor shall not allow the quantity of any standby stock item to be zero at any time.

5.2.4.12 Minor Construction Project Accomplishment

The Contractor shall accomplish maintenance, repair, and minor construction projects with an estimated cost of \$100,000 or less. Projects will be ordered by the Government through the issue of a valid work document for maintenance, construction, alteration, or repair (including dredging, excavating, and painting) of building, structures, or other real property, to include Army Family Housing (AFH) units. The terms "buildings, structures, or other real property" include, but are not limited to, improvements of all types such as dams, plants, streets, sewers, mains, power lines, cemeteries, pumping stations, and railways. All construction projects with an estimated cost in excess of \$100,000, regardless of characterization or funding source, will be the responsibility of the Government and will be accomplished through other means available to the Government. There is no dollar limitation on projects designated for services. The Government retains the right to accomplish by separate contract any project that is determined by the COR to be beyond the Contractor's resources or otherwise not appropriate for Contractor performance.

5.2.4.12.1 Project Assistance. The Government will select and approve projects or portions of projects to be accomplished under the Self-Help program or troop construction program. Projects selected will be desk estimated for funded and unfunded costs by the Government prior to approval of the DA Form 4283. The Contractor shall prepare drawings, detailed estimates, and bill of materials for these projects when directed by the Government. The Contractor shall, upon official tasking, requisition, receive, and issue materials necessary for completion of the project.

5.2.4.12.2 Subcontracting. For projects tasked for execution by subcontract, the Contractor shall forward subcontract submittals to the COR for review and approval prior to project start date.

5.2.4.13 Demolition

The Contractor shall demolish facilities and portions of facilities identified by the COR according to the standards specified herein, OSHA Volume III, Construction Standards and Interpretations, and US Army Corps of Engineers EM-385-1-1 Safety and Health Requirements, current edition.

5.2.4.13.1 Protection and Safety.

5.2.4.13.1.1 Protection of Existing Work. The Contractor shall protect existing work that is to remain in place or be reused by using temporary covers, shoring, bracing, and supports. The Contractor shall repair or replace all such items damaged during demolition. The Contractor shall not overload structural elements and shall provide new supports or reinforcement for existing construction weakened by demolition or removal work.

5.2.4.13.1.2 Protection from Weather. The Contractor shall protect building interiors and all materials and equipment from the weather at all times. Where removal of existing roofing is necessary to accomplish work, the Contractor shall provide materials and workmen immediately to provide adequate and approved temporary covering of exposed areas. The Contractor shall provide monitoring and maintenance to temporary coverings as required to ensure effectiveness and to prevent displacement.

5.2.4.13.1.3 Traffic Restriction. The Contractor shall use traffic barricades with flashing lights and other similar warning and area restriction devices to prevent traffic through areas where demolition is occurring. The Contractor shall notify the COR prior to work initiation when traffic will be impeded by work.

5.2.4.13.1.4 Use of Explosives. The Contractor shall not use explosives in the course of any work specified herein.

5.2.4.13.2 Structures, Walls, and Partitions. The Contractor shall remove structures, walls, partitions, and slabs as required to properly accomplish maintenance, repair, alteration, or removal of facilities directed by the COR.

5.2.4.13.3 Utility Services. The Contractor shall disconnect utility services and related equipment as required during the course of demolition.

5.2.4.13.4 Paving and Slabs. The Contractor shall remove concrete and asphaltic concrete paving and slabs including aggregate base to the depth necessary to perform required work, including patching, repairs, and demolition.

5.2.4.13.5 Roofing. The Contractor shall remove built-up roofing to effect connections with new flashing or roofing or as required in demolition. The Contractor shall cut existing felts and insulation along straight lines and remove gravel surfacing from existing roofing felts for a distance of not less than 18 inches back from the cut. The Contractor shall remove gravel without damaging felts down to the top ply of felt. Unless otherwise directed by the COR, the Contractor shall remove minor roofing and insulation without damaging the roof deck.

5.2.4.13.6 Masonry. The Contractor shall remove masonry carefully so as to prevent damage to surfaces that will remain and to facilitate the installation of minor masonry new work.

5.2.4.13.7 Concrete. The Contractor shall remove minor concrete structures by sawing along straight lines to a depth of not less than 2". The Contractor shall make all cuts in walls perpendicular to the wall face and in alignment with cuts in the opposite face. The remainder of the concrete shall be broken out, provided that the broken area is concealed in the finished work, and that the remaining concrete is sound. At locations where the broken face cannot be concealed, it shall be ground smooth or the saw cut shall be made through the entire slab.

5.2.4.13.8 Filling. The Contractor shall fill holes and other hazardous openings.

5.2.4.13.9 Disposition of Material. Title to all materials and equipment to be removed, except as otherwise directed, will remain with the Government and shall be handled in accordance with the directions found in individual job orders or service orders. The Contractor shall remove and store carefully all materials and equipment to be reused or relocated, and reinstall equipment as required.

5.2.4.14 Medical and Dental Facilities Maintenance

5.2.4.14.1 General Requirements. Medical and dental facilities and equipment to be maintained and repaired are those listed in this paragraph. Other maintenance work performed by the Contractor at any medical or dental facility on Installation shall be accomplished in accordance with the applicable sections of this Functional Area. The Contractor shall respond to high priority work orders within ten minutes. The Contractor's medical and dental maintenance team shall perform emergency and routine work in the following areas defined below:

- Heating and Cooling (HVAC) and related equipment
- Interior Electrical and related equipment
- Electrical Controls and related equipment
- Interior Plumbing and related equipment
- Carpentry and Painting

5.2.4.14.2 Electrical Work. Work shall include, but not be limited to: changing light bulbs, replacing fluorescent ballasts, and changing lighting fixtures; inspecting, testing, cleaning, repairing, and adjusting electrical buzzer and bell circuits, light sockets, lighting fixtures, emergency lights and emergency lighting systems, fans, switches, heating appliances, central clock systems, rheostats, and line voltage thermostats; and accomplishing the electrical site preparation for installation of clinic and dental equipment.

5.2.4.15 Miscellaneous Labor and Support

5.2.4.15.1 Ceremony and Special Event Support. The Contractor shall provide all services required for ceremonies and special events. These ceremonies and special events necessitate work including, but not limited to: lighting for trees, stages, area lighting, and spotlighting; cleanup; decorating areas; setting up and removing chairs

or bleachers; electrical support for the duration of the event; power requirements for bands, vendors, and sound equipment; fabrication, delivery, painting, and assembly of stages, platforms, fencing, and other wood work; hanging flags, banners, pennants, and bunting; and setting up and removing signs, to include directional signs.

5.2.4.15.2 Interstation and Intrastation Moves. The Contractor shall provide services for the movement of furniture and technical and non-technical equipment resulting from the relocation of Government operations. The Contractor shall perform work that includes, but is not limited to, moving furniture or bulky items and providing labor support to Government activities.

5.2.4.15.3 Staging and Scaffolding. The Contractor shall perform staging and scaffolding services to support work as required in this contract and as requested by the COR. The Contractor shall install and remove prefabricated metal scaffolding. All wooden staging shall be fabricated, installed, and removed.

5.2.4.15.4 Hurricane and Storm Support. The Contractor shall perform inspections and work during Hurricane weather and other storms as directed by the COR. The Contractor shall follow the DPW Standing Operating Procedure (SOP) on Weather Requirements. Inspections and work includes, but is not limited to: the operation of sump pumps; electrical distribution lines, and critical generators; inspection of loose gutters, siding, and possible flying objects; boarding up and/or taping large glass enclosures; and sand bagging.

[This Page Not Used]